



SEQUENCE LISTING

<110> BROWN, ARTHUR M.  
WIBLE, BARBARA A.

<120> METHODS OF INDUCING APOPTOSIS IN HYPERPROLIFERATION  
CELLS

<130> 22884/04085

<140> 10/784,528

<141> 2004-02-23

<150> 10/000,778

<151> 2001-10-31

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<170> PatentIn Ver. 3.3

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<213> Homo sapiens

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Val Gly Ser Pro Gly Pro Leu Ala Pro Ile Pro Pro Thr Leu Leu Ala	
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Pro Gly Thr Leu Leu Gly Pro Lys Arg Glu Val Asp Met His Pro Pro	
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ctg ccc cag cct gtg cac cct gat gtc acc atg aaa cca ttg ccc ttc	240
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Tyr Glu Val Tyr Gly Glu Leu Ile Arg Pro Thr Thr Leu Ala Ser Thr	
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tct agc cag cgg ttt gag gaa gcg cac ttt acc ttt gcc ctg aca ccc	336
Ser Ser Gln Arg Phe Glu Glu Ala His Phe Thr Phe Ala Leu Thr Pro	
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Lys	Cys	Asp	Tyr	Thr	Ile	Gln	Val	Gln	Leu	Arg	Phe	Cys	Leu	Cys	Glu	
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Val	Asn	Gly	Lys	Leu	Cys	Pro	Leu	Pro	Gly	Tyr	Leu	Pro	Pro	Thr	Lys	
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Asn	Gly	Ala	Glu	Pro	Lys	Arg	Pro	Ser	Arg	Pro	Ile	Asn	Ile	Thr	Pro	
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Leu	Ala	Arg	Leu	Ser	Ala	Thr	Val	Pro	Asn	Thr	Ile	Val	Val	Asn	Trp	
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Gln	Leu	Thr	Ala	Gly	Thr	Leu	Leu	Gln	Lys	Leu	Arg	Ala	Lys	Gly	Ile	
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Arg	Asn	Pro	Asp	His	Ser	Arg	Ala	Leu	Ile	Lys	Glu	Lys	Leu	Thr	Ala	
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Asp	Pro	Asp	Ser	Glu	Val	Ala	Thr	Thr	Ser	Leu	Arg	Val	Ser	Leu	Met	
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Cys	Ala	His	Leu	Gln	Ser	Phe	Asp	Ala	Ala	Leu	Tyr	Leu	Gln	Met	Asn	
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Glu	Lys	Lys	Pro	Thr	Trp	Thr	Cys	Pro	Val	Cys	Asp	Lys	Lys	Ala	Pro	
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tat	gaa	tct	ctt	atc	att	gat	ggt	tta	ttt	atg	gag	att	ctt	agt	tcc	1008
Tyr	Glu	Ser	Leu	Ile	Ile	Asp	Gly	Leu	Phe	Met	Glu	Ile	Leu	Ser	Ser	
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Pro Met Lys Pro Lys Lys Glu Ala Ser Glu Val Cys Pro Pro Pro Gly	
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Ser Glu Asn Lys Lys Lys Val Glu Val Ile Asp Leu Thr Ile Glu Ser	
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Ser Ser Asp Glu Glu Asp Leu Pro Pro Thr Lys Lys His Cys Ser Val	
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acc tca gct gcc atc ccg gcc cta cct gga agc aaa gga gtc ctg aca	1296
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tct ggc cac cag cca tcc tcg gtg cta agg agc cct gct atg ggc acg	1344
Ser Gly His Gln Pro Ser Ser Val Leu Arg Ser Pro Ala Met Gly Thr	
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Leu Gly Gly Asp Phe Leu Ser Ser Leu Pro Leu His Glu Tyr Pro Pro	
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gcc ttc cca ctg gga gcc gac atc caa ggt tta gat tta ttt tca ttt	1440
Ala Phe Pro Leu Gly Ala Asp Ile Gln Gly Leu Asp Leu Phe Ser Phe	
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ctt cag aca gag agt cag cac tat ggc ccc tct gtc atc acc tca cta	1488
Leu Gln Thr Glu Ser Gln His Tyr Gly Pro Ser Val Ile Thr Ser Leu	
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Asp Glu Gln Asp Ala Leu Gly His Phe Phe Gln Tyr Arg Gly Thr Pro	
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tct cac ttt ctg ggc cca ctg gcc ccc acg ctg ggg agc tcc cac tgc	1584
Ser His Phe Leu Gly Pro Leu Ala Pro Thr Leu Gly Ser Ser His Cys	
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Ser Ala Thr Pro Ala Pro Pro Pro Gly Arg Val Ser Ser Ile Val Ala	
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cct ggg ggg gcc ttg agg gag ggg cat gga gga ccc ctg ccc tca ggt	1680
Pro Gly Gly Ala Leu Arg Glu Gly His Gly Gly Pro Leu Pro Ser Gly	
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 Val Gly Ser Pro Gly Pro Leu Ala Pro Ile Pro Pro Thr Leu Leu Ala  
 35 40 45  
 Pro Gly Thr Leu Leu Gly Pro Lys Arg Glu Val Asp Met His Pro Pro  
 50 55 60  
 Leu Pro Gln Pro Val His Pro Asp Val Thr Met Lys Pro Leu Pro Phe  
 65 70 75 80  
 Tyr Glu Val Tyr Gly Glu Leu Ile Arg Pro Thr Thr Leu Ala Ser Thr  
 85 90 95  
 Ser Ser Gln Arg Phe Glu Glu Ala His Phe Thr Phe Ala Leu Thr Pro  
 100 105 110  
 Gln Gln Val Gln Gln Ile Leu Thr Ser Arg Glu Val Leu Pro Gly Ala  
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 Thr Ser Cys Pro Gln Glu Asp Tyr Phe Pro Pro Asn Leu Phe Val Lys  
 145 150 155 160  
 Val Asn Gly Lys Leu Cys Pro Leu Pro Gly Tyr Leu Pro Pro Thr Lys  
 165 170 175  
 Asn Gly Ala Glu Pro Lys Arg Pro Ser Arg Pro Ile Asn Ile Thr Pro  
 180 185 190  
 Leu Ala Arg Leu Ser Ala Thr Val Pro Asn Thr Ile Val Val Asn Trp  
 195 200 205  
 Ser Ser Glu Phe Gly Arg Asn Tyr Ser Leu Ser Val Tyr Leu Val Arg  
 210 215 220  
 Gln Leu Thr Ala Gly Thr Leu Leu Gln Lys Leu Arg Ala Lys Gly Ile  
 225 230 235 240  
 Arg Asn Pro Asp His Ser Arg Ala Leu Ile Lys Glu Lys Leu Thr Ala  
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Asp	Pro	Asp	Ser	Glu	Val	Ala	Thr	Thr	Ser	Leu	Arg	Val	Ser	Leu	Met	260	265	270
Cys	Pro	Leu	Gly	Lys	Met	Arg	Leu	Thr	Val	Pro	Cys	Arg	Ala	Leu	Thr	275	280	285
Cys	Ala	His	Leu	Gln	Ser	Phe	Asp	Ala	Ala	Leu	Tyr	Leu	Gln	Met	Asn	290	295	300
Glu	Lys	Lys	Pro	Thr	Trp	Thr	Cys	Pro	Val	Cys	Asp	Lys	Lys	Ala	Pro	305	310	315
Tyr	Glu	Ser	Leu	Ile	Ile	Asp	Gly	Leu	Phe	Met	Glu	Ile	Leu	Ser	Ser	325	330	335
Cys	Ser	Asp	Cys	Asp	Glu	Ile	Gln	Phe	Met	Glu	Asp	Gly	Ser	Trp	Cys	340	345	350
Pro	Met	Lys	Pro	Lys	Lys	Glu	Ala	Ser	Glu	Val	Cys	Pro	Pro	Pro	Gly	355	360	365
Tyr	Gly	Leu	Asp	Gly	Leu	Gln	Tyr	Ser	Pro	Val	Gln	Gly	Gly	Asp	Pro	370	375	380
Ser	Glu	Asn	Lys	Lys	Lys	Val	Glu	Val	Ile	Asp	Leu	Thr	Ile	Glu	Ser	385	390	395
Ser	Ser	Asp	Glu	Glu	Asp	Leu	Pro	Pro	Thr	Lys	Lys	His	Cys	Ser	Val	405	410	415
Thr	Ser	Ala	Ala	Ile	Pro	Ala	Leu	Pro	Gly	Ser	Lys	Gly	Val	Leu	Thr	420	425	430
Ser	Gly	His	Gln	Pro	Ser	Ser	Val	Leu	Arg	Ser	Pro	Ala	Met	Gly	Thr	435	440	445
Leu	Gly	Gly	Asp	Phe	Leu	Ser	Ser	Leu	Pro	Leu	His	Glu	Tyr	Pro	Pro	450	455	460
Ala	Phe	Pro	Leu	Gly	Ala	Asp	Ile	Gln	Gly	Leu	Asp	Leu	Phe	Ser	Phe	465	470	475
Leu	Gln	Thr	Glu	Ser	Gln	His	Tyr	Gly	Pro	Ser	Val	Ile	Thr	Ser	Leu	485	490	495
Asp	Glu	Gln	Asp	Ala	Leu	Gly	His	Phe	Phe	Gln	Tyr	Arg	Gly	Thr	Pro	500	505	510
Ser	His	Phe	Leu	Gly	Pro	Leu	Ala	Pro	Thr	Leu	Gly	Ser	Ser	His	Cys	515	520	525
Ser	Ala	Thr	Pro	Ala	Pro	Pro	Pro	Gly	Arg	Val	Ser	Ser	Ile	Val	Ala	530	535	540
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          20              25              30

Arg  Lys  His  Glu  Leu  Leu  Thr  Lys  Ala  Leu  His  Leu  Leu  Lys  Ala  Gly
          35              40              45

Cys  Ser  Pro  Ala  Val  Gln  Met  Lys  Ile  Lys  Glu  Leu  Tyr  Arg  Arg  Arg
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Phe  Pro  Gln  Lys  Ile  Met  Thr  Pro  Ala  Asp  Leu  Ser  Ile  Pro  Asn  Val
  65              70              75              80

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His	Ser	Ser	Pro	Met	Pro	Ala	Thr	Leu	Ser	Pro	Ser	Thr	Ile	Pro	Gln	
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Leu	Leu	Gly	Pro	Lys	His	Lys	Leu	Glu	Leu	Pro	His	Leu	Thr	Ser	Ala	
				115					120					125		
Leu	His	Pro	Val	His	Pro	Asp	Ile	Lys	Leu	Gln	Lys	Leu	Pro	Phe	Tyr	
				130					135					140		
Asp	Leu	Leu	Asp	Glu	Leu	Ile	Lys	Pro	Thr	Ser	Leu	Ala	Ser	Asp	Asn	
				145					150					155		
Ser	Gln	Arg	Phe	Arg	Glu	Thr	Cys	Phe	Ala	Phe	Ala	Leu	Thr	Pro	Gln	
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Gln	Val	Gln	Gln	Ile	Ser	Ser	Ser	Met	Asp	Ile	Ser	Gly	Thr	Lys	Cys	
				180					185					190		
Asp	Phe	Thr	Val	Gln	Val	Gln	Leu	Arg	Phe	Cys	Leu	Ser	Glu	Thr	Ser	
				195					200					205		
Cys	Pro	Gln	Glu	Asp	His	Phe	Pro	Pro	Asn	Leu	Cys	Val	Lys	Val	Asn	
				210					215					220		
Thr	Lys	Pro	Cys	Ser	Leu	Pro	Gly	Tyr	Leu	Pro	Pro	Thr	Lys	Asn	Gly	
				225					230					235		
Val	Glu	Pro	Lys	Arg	Pro	Ser	Arg	Pro	Ile	Asn	Ile	Thr	Ser	Leu	Val	
				245					250					255		
Arg	Leu	Ser	Thr	Thr	Val	Pro	Asn	Thr	Met	Cys	Ser	Trp	Thr	Ala	Glu	
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Ser	Thr	Val	Leu	Leu	Gln	Arg	Leu	Arg	Ala	Lys	Gly	Ile	Arg	Asn	Pro	
				290					295					300		
Asp	His	Ser	Arg	Ala	Leu	Ile	Lys	Glu	Lys	Leu	Thr	Ala	Asp	Pro	Asp	
				305					310					315		
Ser	Glu	Ile	Ala	Thr	Thr	Ser	Leu	Arg	Val	Ser	Leu	Leu	Cys	Pro	Leu	
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Gly	Lys	Met	Arg	Leu	Thr	Ile	Pro	Cys	Arg	Ala	Leu	Thr	Cys	Ser	His	
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Leu	Gln	Cys	Phe	Asp	Ala	Thr	Leu	Tyr	Ile	Gln	Met	Asn	Glu	Lys	Lys	
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Pro	Thr	Trp	Val	Cys	Pro	Val	Cys	Asp	Lys	Lys	Ala	Pro	Tyr	Glu	His	
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Leu Ile Ile Asp Gly Leu Phe Met Glu Ile Leu Lys Tyr Cys Thr Asp  
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 Cys Asp Glu Ile Gln Phe Lys Glu Asp Gly Thr Trp Ala Pro Met Arg  
 405 410 415  
 Ser Lys Lys Glu Val Gln Glu Val Ser Ala Ser Tyr Asn Gly Val Asp  
 420 425 430  
 Gly Cys Leu Ser Ser Thr Leu Glu His Gln Val Ala Ser His His Gln  
 435 440 445  
 Ser Ser Asn Lys Asn Lys Lys Val Glu Val Ile Asp Leu Thr Ile Asp  
 450 455 460  
 Ser Ser Ser Asp Glu Glu Glu Glu Glu Pro Ser Ala Lys Arg Thr Cys  
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 Pro Ser Leu Ser Pro Thr Ser Pro Leu Asn Asn Lys Gly Ile Leu Ser  
 485 490 495  
 Leu Pro His Gln Ala Ser Pro Val Ser Arg Thr Pro Ser Leu Pro Ala  
 500 505 510  
 Val Asp Thr Ser Tyr Ile Asn Thr Ser Leu Ile Gln Asp Tyr Arg His  
 515 520 525  
 Pro Phe His Met Thr Pro Met Pro Tyr Asp Leu Gln Gly Leu Asp Phe  
 530 535 540  
 Phe Pro Phe Leu Ser Gly Asp Asn Gln His Tyr Asn Thr Ser Leu Leu  
 545 550 555 560  
 Ala Ala Ala Ala Ala Val Ser Asp Asp Gln Asp Leu Leu His Ser  
 565 570 575  
 Ser Arg Phe Phe Pro Tyr Thr Ser Ser Gln Met Phe Leu Asp Gln Leu  
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 Ser Ala Gly Gly Ser Thr Ser Leu Pro Thr Thr Asn Gly Ser Ser Ser  
 595 600 605  
 Gly Ser Asn Ser Ser Leu Val Ser Ser Asn Ser Leu Arg Glu Ser His  
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 Ser His Thr Val Thr Asn Arg Ser Ser Thr Asp Thr Ala Ser Ile Phe  
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 Gly Ile Ile Pro Asp Ile Ile Ser Leu Asp  
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&lt;211&gt; 651

&lt;212&gt; PRT

&lt;213&gt; Mus musculus



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Arg	Lys	His	Glu	Leu	Leu	Thr	Lys	Ala	Leu	His	Leu	Leu	Lys	Ala	Gly
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Cys	Ser	Pro	Ala	Val	Gln	Met	Lys	Ile	Lys	Glu	Leu	Tyr	Arg	Arg	Arg
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Phe	Pro	Gln	Lys	Ile	Met	Thr	Pro	Ala	Asp	Leu	Ser	Ile	Pro	Asn	Val
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His	Ser	Ser	Pro	Met	Pro	Pro	Thr	Leu	Ser	Pro	Ser	Thr	Ile	Pro	Gln
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Leu	Thr	Tyr	Asp	Gly	His	Pro	Ala	Ser	Ser	Pro	Leu	Leu	Pro	Val	Ser
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Leu	Leu	Gly	Pro	Lys	His	Glu	Leu	Glu	Leu	Pro	His	Leu	Thr	Ser	Ala
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Leu	His	Pro	Val	His	Pro	Asp	Ile	Lys	Leu	Gln	Lys	Leu	Pro	Phe	Tyr
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Asp	Leu	Leu	Asp	Glu	Leu	Ile	Lys	Pro	Thr	Ser	Leu	Ala	Ser	Asp	Asn
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Ser	Gln	Arg	Phe	Arg	Glu	Thr	Cys	Phe	Ala	Phe	Ala	Leu	Thr	Pro	Gln
				165					170					175	
Gln	Val	Gln	Gln	Ile	Ser	Ser	Ser	Met	Asp	Ile	Ser	Gly	Thr	Lys	Cys
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Asp	Phe	Thr	Val	Gln	Val	Gln	Leu	Arg	Phe	Cys	Leu	Ser	Glu	Thr	Ser
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Cys	Pro	Gln	Glu	Asp	His	Phe	Pro	Pro	Asn	Leu	Cys	Val	Lys	Val	Asn
	210					215					220				
Thr	Lys	Pro	Cys	Ser	Leu	Pro	Gly	Tyr	Leu	Pro	Pro	Thr	Lys	Asn	Gly
225					230					235					240
Val	Glu	Pro	Lys	Arg	Pro	Ser	Arg	Pro	Ile	Asn	Ile	Thr	Ser	Leu	Val
				245					250					255	
Arg	Leu	Ser	Thr	Thr	Val	Pro	Asn	Thr	Ile	Val	Val	Ser	Trp	Thr	Ala
			260					265					270		
Glu	Ile	Gly	Arg	Asn	Tyr	Ser	Met	Ala	Val	Tyr	Leu	Val	Lys	Gln	Leu
		275					280					285			
Ser	Ser	Thr	Val	Leu	Leu	Gln	Arg	Leu	Arg	Ala	Lys	Gly	Ile	Arg	Asn
	290					295					300				

Pro Asp His Ser Arg Ala Leu Ile Lys Glu Lys Leu Thr Ala Asp Ser  
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 Asp Ser Glu Ile Ala Thr Thr Ser Leu Arg Val Ser Leu Leu Cys Pro  
 325 330 335  
 Leu Gly Lys Met Arg Leu Thr Ile Pro Cys Arg Ala Leu Thr Cys Ser  
 340 345 350  
 His Leu Gln Cys Phe Asp Ala Thr Leu Tyr Ile Gln Met Asn Glu Lys  
 355 360 365  
 Lys Pro Thr Trp Val Cys Pro Val Cys Asp Lys Lys Ala Pro Tyr Glu  
 370 375 380  
 His Leu Ile Ile Asp Gly Leu Phe Met Glu Ile Leu Lys Tyr Cys Thr  
 385 390 395 400  
 Asp Cys Asp Glu Ile Gln Phe Lys Glu Asp Gly Ser Trp Ala Pro Met  
 405 410 415  
 Arg Ser Lys Lys Glu Val Gln Glu Val Thr Ala Ser Tyr Asn Gly Val  
 420 425 430  
 Asp Gly Cys Leu Ser Ser Thr Leu Glu His Gln Val Ala Ser His Asn  
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 Gln Ser Ser Asn Lys Asn Lys Lys Val Glu Val Ile Asp Leu Thr Ile  
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 Asp Ser Ser Ser Asp Glu Glu Glu Glu Glu Pro Pro Ala Lys Arg Thr  
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 Cys Pro Ser Leu Ser Pro Thr Ser Pro Leu Ser Asn Lys Gly Ile Leu  
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 Ser Leu Pro His Gln Ala Ser Pro Val Ser Arg Thr Pro Ser Leu Pro  
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 565 570 575  
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 580 585 590  
 Leu Ser Ala Gly Gly Ser Thr Ser Leu Pro Ala Thr Asn Gly Ser Ser  
 595 600 605

Ser Gly Ser Asn Ser Ser Leu Val Ser Ser Asn Ser Leu Arg Glu Ser  
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35 40 45

Lys Glu Leu Tyr Arg Arg Arg Phe Pro Arg Lys Thr Leu Gly Pro Ser  
50 55 60

Asp Leu Ser Leu Leu Ser Leu Pro Pro Gly Thr Ser Pro Pro Val His  
65 70 75 80

Pro Asp Val Thr Met Lys Pro Leu Pro Phe Tyr Glu Val Tyr Gly Glu  
85 90 95

Leu Ile Arg Pro Thr Thr Leu Ala Ser Thr Ser Ser Gln Arg Phe Glu  
100 105 110

Glu Ala His Phe Thr Phe Ala Leu Thr Pro Gln Gln Leu Gln Gln Ile  
115 120 125

Leu Thr Ser Arg Glu Val Leu Pro Gly Ala Lys Cys Asp Tyr Thr Ile  
130 135 140

Gln Val Gln Leu Arg Phe Cys Leu Cys Glu Thr Ser Cys Pro Gln Glu  
145 150 155 160

Asp Tyr Phe Pro Pro Asn Leu Phe Val Lys Val Asn Gly Lys Leu Cys  
165 170 175

Pro Leu Pro Gly Tyr Leu Pro Pro Thr Lys Asn Gly Ala Glu Pro Arg  
180 185 190

Gly Pro Ala Val Arg Ser Thr Ser His Pro Trp Leu Asp Ser Gln Pro  
195 200 205

Leu Ser Pro Thr Pro Ser Leu Leu Ile Gly His Leu Ser Leu Asp Gly  
210 215 220

Ile	Thr	Pro	Cys	Pro	Cys	Leu	Val	Arg	Gln	Leu	Thr	Ala	Gly	Thr	Leu	225	230	235	240
Leu	Gln	Lys	Leu	Arg	Ala	Lys	Gly	Ile	Arg	Asn	Pro	Asp	His	Ser	Arg	245	250	255	
Ala	Leu	Ile	Lys	Glu	Lys	Leu	Thr	Ala	Asp	Pro	Asp	Ser	Glu	Val	Ala	260	265	270	
Thr	Thr	Ser	Leu	Pro	Gly	Val	Thr	His	Val	Pro	Ala	Arg	Lys	Met	Arg	275	280	285	
Leu	Thr	Val	Pro	Cys	Arg	Ala	Leu	Thr	Cys	Ala	His	Leu	Gln	Ser	Phe	290	295	300	
Asp	Ala	Ala	Leu	Tyr	Ile	Gln	Met	Asn	Glu	Lys	Lys	Pro	Thr	Trp	Thr	305	310	315	320
Cys	Pro	Val	Cys	Asp	Lys	Lys	Ala	Pro	Tyr	Glu	Ser	Leu	Ile	Ile	Asp	325	330	335	
Gly	Leu	Phe	Met	Glu	Ile	Leu	Asn	Ser	Cys	Ser	Asp	Cys	Asp	Glu	Ile	340	345	350	
Gln	Phe	Met	Glu	Asp	Gly	Ser	Trp	Cys	Pro	Met	Lys	Pro	Lys	Lys	Glu	355	360	365	
Ala	Ser	Glu	Val	Cys	Pro	Pro	Gly	Tyr	Gly	Leu	Asp	Gly	Leu	Gln		370	375	380	
Tyr	Ser	Ala	Val	Gln	Glu	Gly	Ile	Gln	Pro	Glu	Ser	Lys	Lys	Arg	Val	385	390	395	400
Glu	Val	Ile	Asp	Leu	Thr	Ile	Glu	Ser	Ser	Ser	Asp	Glu	Glu	Asp	Leu	405	410	415	
Pro	Pro	Thr	Lys	Lys	Gln	Cys	Ser	Val	Thr	Ser	Ala	Ala	Ile	Pro	Ala	420	425	430	
Leu	Leu	Gly	Ser	Lys	Gly	Val	Leu	Thr	Ser	Gly	His	Gln	Pro	Ser	Ser	435	440	445	
Val	Leu	Arg	Ser	Pro	Ala	Met	Gly	Thr	Leu	Gly	Ser	Asp	Phe	Leu	Ser	450	455	460	
Ser	Leu	Pro	Val	His	Glu	Tyr	Pro	Pro	Ala	Phe	Pro	Leu	Gly	Ala	Asp	465	470	475	480
Ile	Gln	Gly	Leu	Asp	Leu	Phe	Ser	Phe	Leu	Gln	Thr	Glu	Ser	Gln	Gln	485	490	495	
Tyr	Gly	Pro	Ser	Val	Ile	Ile	Ser	Leu	Asp	Glu	Gln	Asp	Thr	Leu	Gly	500	505	510	
His	Pro	Phe	Gln	Tyr	Arg	Gly	Thr	Pro	Ser	His	Phe	Leu	Gly	Pro	Leu	515	520	525	

Ala Pro Thr Leu Gly Ser Cys His Gly Ser Ser Thr Pro Ala Pro Pro  
530 535 540

Pro Gly Arg Val Ser Ser Ile Val Ala Pro Gly Ser Ser Leu Arg Glu  
545 550 555 560

Gly His Gly Gly Pro Leu Pro Ser Gly Pro Ser Leu Thr Gly Cys Arg  
565 570 575

Ser Asp Val Ile Ser Leu Asp  
580

<210> 8

<211> 572

<212> PRT

<213> Homo sapiens

<400> 8

Met Ala Asp Phe Glu Glu Leu Arg Asn Met Val Ser Ser Phe Arg Val  
1 5 10 15

Ser Glu Leu Gln Val Leu Leu Gly Phe Ala Gly Arg Asn Lys Ser Gly  
20 25 30

Arg Lys His Asp Leu Leu Met Arg Ala Leu His Leu Leu Lys Ser Gly  
35 40 45

Cys Ser Pro Ala Val Gln Ile Lys Ile Arg Glu Leu Tyr Arg Arg Arg  
50 55 60

Tyr Pro Arg Thr Leu Glu Gly Leu Ser Asp Leu Ser Thr Ile Lys Ser  
65 70 75 80

Ser Val Phe Ser Leu Asp Gly Gly Ser Ser Pro Val Glu Pro Asp Leu  
85 90 95

Ala Val Ala Gly Ile His Ser Leu Pro Ser Thr Ser Val Thr Pro His  
100 105 110

Ser Pro Ser Ser Pro Val Gly Ser Val Leu Leu Gln Asp Thr Lys Pro  
115 120 125

Thr Phe Glu Met Gln Gln Pro Ser Pro Pro Ile Pro Pro Val His Pro  
130 135 140

Asp Val Gln Leu Lys Asn Leu Pro Phe Tyr Asp Val Leu Asp Val Leu  
145 150 155 160

Ile Lys Pro Thr Ser Leu Val Gln Ser Ser Ile Gln Arg Phe Gln Glu  
165 170 175

Lys Phe Phe Ile Phe Ala Leu Thr Pro Gln Gln Val Arg Glu Ile Cys  
180 185 190

Ile Ser Arg Asp Phe Leu Pro Gly Gly Arg Arg Asp Tyr Thr Val Gln  
195 200 205

Val	Gln	Leu	Arg	Leu	Cys	Leu	Ala	Glu	Thr	Ser	Cys	Pro	Gln	Glu	Asp	210	215	220
Asn	Tyr	Pro	Asn	Ser	Leu	Cys	Ile	Lys	Val	Asn	Gly	Lys	Leu	Phe	Pro	225	230	235
Leu	Pro	Gly	Tyr	Ala	Pro	Pro	Pro	Lys	Asn	Gly	Ile	Glu	Gln	Lys	Arg	245	250	255
Pro	Gly	Arg	Pro	Leu	Asn	Ile	Thr	Ser	Leu	Val	Arg	Leu	Ser	Ser	Ala	260	265	270
Val	Pro	Asn	Gln	Ile	Ser	Ile	Ser	Trp	Ala	Ser	Glu	Ile	Gly	Lys	Asn	275	280	285
Tyr	Ser	Met	Ser	Val	Tyr	Leu	Val	Arg	Gln	Leu	Thr	Ser	Ala	Met	Leu	290	295	300
Leu	Gln	Arg	Leu	Lys	Met	Lys	Gly	Ile	Arg	Asn	Pro	Asp	His	Ser	Arg	305	310	315
Ala	Leu	Ile	Lys	Glu	Lys	Leu	Thr	Ala	Asp	Pro	Asp	Ser	Glu	Ile	Ala	325	330	335
Thr	Thr	Ser	Leu	Arg	Val	Ser	Leu	Met	Cys	Pro	Leu	Gly	Lys	Met	Arg	340	345	350
Leu	Thr	Ile	Pro	Cys	Arg	Ala	Val	Thr	Cys	Thr	His	Leu	Gln	Cys	Phe	355	360	365
Asp	Ala	Ala	Leu	Tyr	Ile	Gln	Met	Asn	Glu	Lys	Lys	Pro	Thr	Trp	Ile	370	375	380
Cys	Pro	Val	Cys	Asp	Lys	Lys	Ala	Ala	Tyr	Glu	Ser	Leu	Ile	Leu	Asp	385	390	395
Gly	Leu	Phe	Met	Glu	Ile	Leu	Asn	Asp	Cys	Ser	Asp	Val	Asp	Glu	Ile	405	410	415
Lys	Phe	Gln	Glu	Asp	Gly	Ser	Trp	Cys	Pro	Met	Arg	Pro	Lys	Lys	Glu	420	425	430
Ala	Met	Lys	Val	Ser	Ser	Gln	Pro	Cys	Thr	Lys	Ile	Glu	Ser	Ser	Ser	435	440	445
Val	Leu	Ser	Lys	Pro	Cys	Ser	Val	Thr	Val	Ala	Ser	Glu	Ala	Ser	Lys	450	455	460
Lys	Lys	Val	Asp	Val	Ile	Asp	Leu	Thr	Ile	Glu	Ser	Ser	Ser	Asp	Glu	465	470	475
Glu	Glu	Asp	Pro	Pro	Ala	Lys	Arg	Lys	Cys	Ile	Phe	Met	Ser	Glu	Thr	485	490	495
Gln	Ser	Ser	Pro	Thr	Lys	Gly	Val	Leu	Met	Tyr	Gln	Pro	Ser	Ser	Val	500	505	510

Arg Val Pro Ser Val Thr Ser Val Asp Pro Ala Ala Ile Pro Pro Ser  
515 520 525

Leu Thr Asp Tyr Ser Val Pro Phe His His Thr Pro Ile Ser Ser Met  
530 535 540

Ser Ser Asp Leu Pro Gly Glu Gln Arg Phe Asn Asp Ile Asn Asn Glu  
545 550 555 560

Leu Lys Leu Gly Thr Ser Ser Asp Thr Val Gln Gln  
565 570

<210> 9

<211> 621

<212> PRT

<213> Homo sapiens

<400> 9

Met Ala Asp Phe Glu Glu Leu Arg Asn Met Val Ser Ser Phe Arg Val  
1 5 10 15

Ser Glu Leu Gln Val Leu Leu Gly Phe Ala Gly Arg Asn Lys Ser Gly  
20 25 30

Arg Lys His Asp Leu Leu Met Arg Ala Leu His Leu Leu Lys Ser Gly  
35 40 45

Cys Ser Pro Ala Val Gln Ile Lys Ile Arg Glu Leu Tyr Arg Arg Arg  
50 55 60

Tyr Pro Arg Thr Leu Glu Gly Leu Ser Asp Leu Ser Thr Ile Lys Ser  
65 70 75 80

Ser Val Phe Ser Leu Asp Gly Gly Ser Ser Pro Val Glu Pro Asp Leu  
85 90 95

Ala Val Ala Gly Ile His Ser Leu Pro Ser Thr Ser Val Thr Pro His  
100 105 110

Ser Pro Ser Ser Pro Val Gly Ser Val Leu Leu Gln Asp Thr Lys Pro  
115 120 125

Thr Phe Glu Met Gln Gln Pro Ser Pro Pro Ile Pro Pro Val His Pro  
130 135 140

Asp Val Gln Leu Lys Asn Leu Pro Phe Tyr Asp Val Leu Asp Val Leu  
145 150 155 160

Ile Lys Pro Thr Ser Leu Val Gln Ser Ser Ile Gln Arg Phe Gln Glu  
165 170 175

Lys Phe Phe Ile Phe Ala Leu Thr Pro Gln Gln Val Arg Glu Ile Cys  
180 185 190

Ile Ser Arg Asp Phe Leu Pro Gly Gly Arg Arg Asp Tyr Thr Val Gln  
195 200 205

Val	Gln	Leu	Arg	Leu	Cys	Leu	Ala	Glu	Thr	Ser	Cys	Pro	Gln	Glu	Asp	210	215	220
Asn	Tyr	Pro	Asn	Ser	Leu	Cys	Ile	Lys	Val	Asn	Gly	Lys	Leu	Phe	Pro	225	230	235
Leu	Pro	Gly	Tyr	Ala	Pro	Pro	Pro	Lys	Asn	Gly	Ile	Glu	Gln	Lys	Arg	245	250	255
Pro	Gly	Arg	Pro	Leu	Asn	Ile	Thr	Ser	Leu	Val	Arg	Leu	Ser	Ser	Ala	260	265	270
Val	Pro	Asn	Gln	Ile	Ser	Ile	Ser	Trp	Ala	Ser	Glu	Ile	Gly	Lys	Asn	275	280	285
Tyr	Ser	Met	Ser	Val	Tyr	Leu	Val	Arg	Gln	Leu	Thr	Ser	Ala	Met	Leu	290	295	300
Leu	Gln	Arg	Leu	Lys	Met	Lys	Gly	Ile	Arg	Asn	Pro	Asp	His	Ser	Arg	305	310	315
Ala	Leu	Ile	Lys	Glu	Lys	Leu	Thr	Ala	Asp	Pro	Asp	Ser	Glu	Ile	Ala	325	330	335
Thr	Thr	Ser	Leu	Arg	Val	Ser	Leu	Met	Cys	Pro	Leu	Gly	Lys	Met	Arg	340	345	350
Leu	Thr	Ile	Pro	Cys	Arg	Ala	Val	Thr	Cys	Thr	His	Leu	Gln	Cys	Phe	355	360	365
Asp	Ala	Ala	Leu	Tyr	Ile	Gln	Met	Asn	Glu	Lys	Lys	Pro	Thr	Trp	Ile	370	375	380
Cys	Pro	Val	Cys	Asp	Lys	Lys	Ala	Ala	Tyr	Glu	Ser	Leu	Ile	Leu	Asp	385	390	395
Gly	Leu	Phe	Met	Glu	Ile	Leu	Asn	Asp	Cys	Ser	Asp	Val	Asp	Glu	Ile	405	410	415
Lys	Phe	Gln	Glu	Asp	Gly	Ser	Trp	Cys	Pro	Met	Arg	Pro	Lys	Lys	Glu	420	425	430
Ala	Met	Lys	Val	Ser	Ser	Gln	Pro	Cys	Thr	Lys	Ile	Glu	Ser	Ser	Ser	435	440	445
Val	Leu	Ser	Lys	Pro	Cys	Ser	Val	Thr	Val	Ala	Ser	Glu	Ala	Ser	Lys	450	455	460
Lys	Lys	Val	Asp	Val	Ile	Asp	Leu	Thr	Ile	Glu	Ser	Ser	Ser	Asp	Glu	465	470	475
Glu	Glu	Asp	Pro	Pro	Ala	Lys	Arg	Lys	Cys	Ile	Phe	Met	Ser	Glu	Thr	485	490	495
Gln	Ser	Ser	Pro	Thr	Lys	Gly	Val	Leu	Met	Tyr	Gln	Pro	Ser	Ser	Val	500	505	510



Arg Val Pro Ser Val Thr Ser Val Asp Pro Ala Ala Ile Pro Pro Ser  
515 520 525

Leu Thr Asp Tyr Ser Val Pro Phe His His Thr Pro Ile Ser Ser Met  
530 535 540

Ser Ser Asp Leu Pro Gly Leu Asp Phe Leu Ser Leu Ile Pro Val Asp  
545 550 555 560

Pro Gln Tyr Cys Pro Pro Met Phe Leu Asp Ser Leu Thr Ser Pro Leu  
565 570 575

Thr Ala Ser Ser Thr Ser Val Thr Thr Thr Ser Ser His Glu Ser Ser  
580 585 590

Thr His Val Ser Ser Ser Ser Ser Arg Ser Glu Thr Gly Val Ile Thr  
595 600 605

Ser Ser Gly Ser Asn Ile Pro Glu Ile Ile Ser Leu Asp  
610 615 620

<210> 10  
<211> 510  
<212> PRT  
<213> Homo sapiens

<400> 10  
Met Ala Ala Glu Leu Val Glu Ala Lys Asn Met Val Met Ser Phe Arg  
1 5 10 15

Val Ser Asp Leu Gln Met Leu Leu Gly Phe Val Gly Arg Ser Lys Ser  
20 25 30

Gly Leu Lys His Glu Leu Val Thr Arg Ala Leu Gln Leu Val Gln Pro  
35 40 45

Asp Cys Ser Pro Glu Leu Phe Lys Lys Ile Lys Glu Leu Tyr Glu Thr  
50 55 60

Arg Tyr Ala Lys Lys Asn Ser Glu Pro Ala Pro Gln Pro His Arg Pro  
65 70 75 80

Leu Asp Pro Leu Thr Met His Ser Thr Tyr Asp Arg Ala Gly Ala Val  
85 90 95

Pro Arg Thr Pro Leu Ala Gly Phe Asn Ile Asp Tyr Pro Val Leu Tyr  
100 105 110

Gly Lys Tyr Leu Asn Gly Leu Gly Arg Leu Pro Ala Lys Thr Leu Lys  
115 120 125

Pro Glu Val Arg Leu Val Lys Leu Pro Phe Phe Asn Met Leu Asp Glu  
130 135 140

Leu Leu Lys Pro Thr Glu Leu Val Pro Gln Asn Asn Glu Lys Leu Gln  
145 150 155 160

Glu Ser Pro Cys Ile Phe Ala Leu Thr Pro Arg Gln Val Glu Leu Ile  
 165 170 175  
 Arg Phe Lys Gln Gly Met Gln Pro Gly Val Lys Ala Val Gln Val Val  
 180 185 190  
 Leu Arg Ile Cys Tyr Ser Asp Thr Ser Cys Pro Gln Glu Asp Gln Tyr  
 195 200 205  
 Pro Pro Asn Ile Ala Val Lys Val Asn His Ser Tyr Cys Ser Val Pro  
 210 215 220  
 Gly Tyr Tyr Pro Ser Asn Lys Pro Gly Val Glu Pro Lys Arg Pro Cys  
 225 230 235 240  
 Arg Pro Ile Asn Leu Thr His Leu Met Tyr Leu Ser Ser Ala Thr Asn  
 245 250 255  
 Arg Ile Thr Val Thr Trp Gly Asn Tyr Gly Lys Ser Tyr Ser Val Ala  
 260 265 270  
 Leu Tyr Leu Val Arg Gln Leu Thr Ser Ser Glu Leu Leu Gln Arg Leu  
 275 280 285  
 Lys Thr Ile Gly Val Lys His Pro Glu Leu Cys Lys Ala Leu Val Lys  
 290 295 300  
 Glu Lys Leu Arg Leu Asp Pro Asp Ser Glu Ile Ala Thr Thr Gly Val  
 305 310 315 320  
 Arg Val Ser Leu Ile Cys Pro Leu Val Lys Met Arg Leu Ser Val Pro  
 325 330 335  
 Cys Arg Ala Glu Thr Cys Ala His Leu Gln Cys Phe Asp Ala Val Phe  
 340 345 350  
 Tyr Ile Gln Met Asn Glu Lys Lys Pro Thr Trp Met Cys Pro Val Cys  
 355 360 365  
 Asp Lys Pro Ala Pro Tyr Asp Gln Leu Ile Ile Asp Gly Leu Leu Ser  
 370 375 380  
 Lys Ile Leu Ser Glu Cys Glu Asp Ala Asp Glu Ile Glu Tyr Leu Val  
 385 390 395 400  
 Asp Gly Ser Trp Cys Pro Ile Arg Ala Glu Lys Glu Arg Ser Cys Ser  
 405 410 415  
 Pro Gln Gly Ala Ile Leu Val Leu Gly Pro Ser Asp Ala Asn Gly Leu  
 420 425 430  
 Leu Pro Ala Pro Ser Val Asn Gly Ser Gly Ala Leu Gly Ser Thr Gly  
 435 440 445  
 Gly Gly Gly Pro Val Gly Ser Met Glu Asn Gly Lys Pro Gly Ala Asp  
 450 455 460

Val Val Asp Leu Thr Leu Asp Ser Ser Ser Ser Ser Glu Asp Glu Glu  
465 470 475 480

Glu Glu Glu Glu Glu Glu Glu Asp Glu Asp Glu Glu Gly Pro Arg Pro  
485 490 495

Lys Arg Arg Cys Pro Phe Gln Lys Gly Leu Val Pro Ala Cys  
500 505 510